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Abstract

Termite attraction system 10 comprises one or more boxes 12 for holding a supply of termite bait and provided with one or more openings 14 for the passage of termites into and out of each box 12. The system 10 also includes a liquid reticulation system 16 for delivering liquid, typically water, at a controlled rate to the ground in the vicinity of or in within the boxes 12 to control the moisture of the ground.

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PATENTS ACT 1990

COMPLETE SPECIFICATION FOR A
PETTY PATENT

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Petty Complete Specification for the invention entitled:

TERMITE ATTRACTION SYSTEM

Details of Associated Provisional Applications No:

Australian Patent Application No P0 2171 dated 12 August 1999

The following is a full description of this invention, including the best method of performing it known to me:

TERMITATE ATTRACTION SYSTEM

The present invention relates to a termite attraction system for use in the eradication of termites.

- 5 Various devices and methods are known for the detection, control and eradication of termites. The application of liquid termiticides is well known for the killing of termites once detected. The termiticides may also be placed in the soil to form a barrier to the encroachment of termites. Arguably, the most effective termiticides have been the
10 organochlorine pesticides such as dieldrin, aldrin, heptachlor and chlordane. However, they have now been banned in most countries because of concerns about long term human health and environmental effects. These termiticides have now been replaced by new termiticides such as organophosphates and synthetic pyrethroids, which even though they are reported to have less impact on the environment, are still toxic to humans and there continues to be a public swing away from the use of such chemicals. This has lead to the
15 recent increase in the use of physical barriers that prevent the progress of termites. One known physical barrier is the TERMIMESH termite screen which is in the form of a stainless steel closely woven mesh.
20 When termites become evident in an area an eradication program is usually undertaken via a process of attracting a large number of termites to a specific location for treatment. To this end various termite detection monitoring systems have been developed. One such system is described in US Patent No 5,329,726 which discloses a system for termite detection and control provided by a subterranean bait station having a perforated outer
25 housing permanently implanted in the terrain below ground level, and a perforated cartridge removably held within the housing. The cartridge initially contains a non-toxic bait material for diagnosis or assessing the level of termite infestation and is periodically removed from the housing for inspection to determine termite activity. If termite activity is detected, the non-toxic bait cartridge is replaced with a corresponding slow acting
30 termiticide containing bait cartridge for the extermination of termites.

The present invention was developed with a view to increasing the effectiveness of the

subterranean type termite detection control systems such as that described in the abovementioned US Patent No 5,329,726.

The essence of the present invention lies in the provision of a reticulation system for
5 delivering water at a controlled rate to the ground in the vicinity of a subterranean bait box
to increase or control the moisture of the ground. This takes advantage of the termites'
innate need for moisture required to stay alive, build their nests and extend their galleries.

According to the present invention there is provided a termite attraction system including
10 at least;

a box for holding a supply of termite bait and provided with one or more openings
for the passage of termites into and out of said box; and,

a liquid reticulation system having a supply line coupled to a supply of liquid
located remote from said box and at least one first conduit coupled to said supply line for
15 delivering liquid directly to the ground in the vicinity of the box, to attract termites to said
box.

Preferably the reticulation system includes a drip control means disposed in said first
conduit in the box to facilitate adjustment of the flow rate of liquid delivered to the ground
20 in the vicinity of the box.

Preferably the reticulation system further includes one or both of a flow control means and
a pressure control means disposed in the supply line for facilitating control of the flow rate
and pressure of liquid available at said drip control means.

25 Preferably said termite attraction system further includes one or more tubular members,
each being open at opposite ends, one end of each member connected to said box and an
opposite end of said tubular members spaced from said box, said tubular members
providing a passage for termites to enter said box.

30 Preferably said termite attraction system further includes a bait disposed in each of said



tubular members.

Preferably said reticulation system further includes means for sensing the moisture of the ground in the vicinity of the box and automatically adjusting one of the drip, flow, or pressure control means to maintain the ground moisture within a predetermined range.

5 Preferably each box has a side wall composed of a plurality of identical interlocking sections.

10 Preferably each section includes first and second complimentary engaging means at prospective opposite sides of each section whereby in use the first engaging means of one section can engage in the second engaging means of an adjacent section thereby interlocking said one and adjacent sections.

15 Preferably each section further comprises upper and lower locating means to facilitate vertical stacking of side walls for adjusting the volume of said box.

20 Preferably each section includes at least one knockout blank configured so that when said blank is knocked out from said section, a resulting aperture in said section can receive one

25 end of one of said tubular members.

Preferably each blank is held within a section by a plurality of frangible pins and is configured to form a gap between the edge of said blank and the adjacent edge of said section, said gap forming said one or more of said openings for the passage of termites

into and out of said box.

An embodiment of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

30 Figure 1 is a schematic representation of an embodiment of the termite attraction system;

- Figure 2 illustrates a section of a box and water reticulation system used in the termite control system shown in Figure 1;
- 5 Figure 3 is a rear view of a section of the box incorporated in the termite control system;
- Figure 4 is a front view of the section of the box shown in Figure 3;
- 10 Figure 5 is a perspective view of an open box constructed of the sections shown in Figures 3 and 4.
- Referring to the accompanying drawings, and in particular Figures 1 and 2, the termite attraction system 10 comprises one or more boxes (in this case three boxes) 12 for holding
- 15 a supply of termite bait (not shown) and provided with one or more openings 14 for the passage of termites into and out of each box 12. The system 10 also includes a reticulation system 16 for delivering liquid, typically water, at a controlled rate to the ground in the vicinity of or within the boxes 12 to control the moisture of the ground thereby enhancing the effectiveness of the bait in the boxes 12.
- 20 The reticulation system 16 includes first conduits 18 for supplying water to each box 12. The conduits 18 extend into respective boxes 12 and each is provided with a drip control means in the form of a valve 20 to facilitate the adjustment of flow rate (generally in terms of the number of drips of water per second) delivered to the ground in the vicinity of each
- 25 box. The valves 20 can be accessed by opening the corresponding box 12 for manual adjustment of the flow/drip rate of water. The conduit 18 may be split into two or more branches 22 downstream of the valve 20 so as to exit the box 12 at multiple locations. However it is to be understood that the conduit 18 may also not branch so that it simply passes into and out of the box 12. The end of each conduit 18 or branch 22 downstream of
- 30 a valve 20 is located outside of and typically near the box 12 in which its valve 20 is disposed to provide drip points for water.

The water reticulation system 16 also includes a supply line 24 that communicates between the first conduits 18 at one end and a water supply, such as a tap 26, at an opposite end. Disposed in the supply line 24 is one or both of a flow controls means in the form of a valve 28 and a pressure controls means in the form of a pressure reducer 30.

- 5 The valve 28 and pressure reducer 30 allow the control of the flow rate and pressure of water available at each of the valves 20 located in the boxes 12.

One or more tubular members (hereinafter referred to as "tubes") 32 are connectable to the boxes 12 and act to extend the physical effective range of the termite attraction system 10.

- 10 The tubes 32 typically made from a flexible plastic material and can conveniently take the form of lengths of plastic tubing typically used in subterranean drainage systems. The tubes 32 are push fitted at one end 34 into a box 12 by removal of knockout blanks 36. Each tube 32 is open at both end 34 and its opposite end 38 and can be laid in any required path extending from or about a box 12. An attractant or bait can be placed in the tube 32 to attract termites. Also a branch 22 of conduit 18 can be laid inside or along a tube 32. The tube 32 effectively acts as passage for termites into the box 12.

- With particular reference to Figures 3-5, it can be seen that each box 12 has a side wall 40 composed of a plurality (in this instance four) identical interlocking sections 42. Each section 42 has first and second complimentary engaging means at opposite ends to facilitate interlocking with an adjacent section 42. The first engaging means in the form of a tongue 44 which is formed as a co-planar extension along one edge of the section 42. The second engaging means is in the form of a corner wall 46 extending perpendicularly to the tongue 44 and provided with a longitudinally extending groove 48 for receiving the tongue 44 of an adjacent section 42. The interlocking of the tongue 44 and groove 48 of adjacent sections 42 to form the side wall 40 of a box 12 is clearly depicted in Figure 5. The bifurcations of corner wall 46 can be provided with a degree of resilience with the groove 48 being of a width marginally less than the width of the tongue 44 to provide an interference fit of the tongue 44 in the groove 48 of adjacent sections. Alternately, various snap blocks can be configured into the tongue 44 and grooves 48 to allow snap fitting of adjacent sections 42.

Each section 42 is provided with two knockout blanks 36. The blanks 36 are in the form of circular discs and are held within apertures 50 in the section 42 by a plurality of frangible pins or legs 52. The diameter of the blanks 36 is smaller than the diameter of the aperture 50 so that an annular slot or groove is formed therebetween. This constitutes the
5 openings 14 through which the termites pass to enter and leave the box 12.

Each section 42 also includes on its inside first and second locating means 54,56 respectively to facilitate the vertical stacking of assembled side walls 40 to allow adjustment of the volume of the box 12. The first locating means 54 is in the form of a U
10 shaped channel the opening of which lies flush or marginally below a longitudinal edge 58 of the section 42. The second locating means 56 is in the form of a rectangular tab that extends from the opposite longitudinal edge 60 of each section 42. The first and second locating means 54,56 are diametrically opposed. As is most apparent from Figure 5, the second locating means 56 extending from the free edge of the side wall 40 would be received in the first locating means 54 of a second side wall (not shown) and vertically stacked thereon. Holes 62 and 64 are formed respectively on the first and second locating means 54,56 which are in mutual alignment when side walls 40 are stacked on each other.
15 A fastening means such as a screw can then be passed through the mutually engaging holes 60,62 to assist in locking a vertically stacked side wall 40 together. Additionally,
20 the holes 60,62 can be used to lock a lid or bottom 64 to one end of a constructed side wall 40.

The operation of the system 10 will now be briefly described.

25 A box 12 constructed of sections 42 is lowered into a hole formed in the ground. A termite bait is placed in the box. The reticulation system 16 is laid in the ground connecting each box 12 to the water supply 26. Optionally, one or more tubes 32 are fitted to one or more of the boxes 12. The pressure reducer 30, valve 28, and valve 20 are adjusted so that a desired drip or flow rate of water is delivered at the end of each conduit
30 18 or branches 22 thereof. A lid is placed on the boxes 12 and the boxes 12 then covered in ground. Ideally, the reticulation system 16 operates to deliver water at a rate so that the ground moisture level approaches 100% without allowing the formation of pools of free

water on the ground. It is known that termites need moisture or water to mix the "mud" required to build their nests. Indeed, it is believed that termites are attracted initially to moisture and then to traditional baits such as cellulose. Thus, termites in the vicinity of the system 10 will be initially attracted to the moisture made available through the 5 reticulation system 16. Thereafter, the attraction of the bait (typically cellulose) will take over and the termites will enter the boxes 12 via the openings 14 or tubes 32. The presence of termites can be visualised by uncovering and opening the boxes. If termites are detected, the bait can be replaced with or mixed with a termicide that is taken back by the termites to their nests.

- 10 Now that an embodiment of the present invention has been described in detail it will be apparent to those skilled in the relevant arts that numerous modifications and variations may be made without departing from the basic inventive concepts. For example, the box 12 can be constructed with a unitary side wall and base but with a removable lid.
- 15 Enhancements in the retractive qualities of the system to termites is independent of the form of the box 12. However, forming the box with identical interlocking panels 42 enables it to easily and economically transported and subsequently constructed and deconstructed. Additionally the provision of the knockout blanks 36 enables the layout of the system 10 to be easily adapted for any specific site. Further, in the described embodiment, the control means for adjusting the moisture of the ground namely the valve 20, valve 28 and pressure reducer 30 are depicted as being manually adjustable. In an alternate embodiment however these can be electronically adjusted automatically on the basis of detected moisture levels. For example, one or more moisture sensors can be placed at strategic positions around the boxes 12 used in the system 10 and a central 20 controller used to measure the detected moisture levels and subsequently adjust one or more of the valves 20, 28 and pressure reducer 30 to maintain moisture within predetermined levels. It is to be further understood that the controlled rate of delivery of water by the reticulation system 16 enables the liquid to be delivered on a continuous basis either at a constant rate or at a variable rate and also allows liquid to be delivered on a 25 continuous intermittent basis. Further, the reticulation system 16 can reticulate any liquid not only water, for example a liquid bait or termicide/pesticide/herbicide. Also the term "bait" is used throughout this specification in a broad sense to include a substance that acts 30

to lure and/or attract a target insect and a substance for killing a target insect.

All such modifications and variations are deemed to be within the scope of the present

invention the nature of which is to be determined from the above description, and the

5 appended claims.

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The claims defining the invention are as follows:

1. A termite attraction system including at least;
a box for holding a supply of termite bait and provided with one or more openings
5 for the passage of termites into and out of said box; and,
a liquid reticulation system having a supply line coupled to a supply of liquid
located remote from said box and at least one first conduit coupled to said supply line for
delivering liquid directly to the ground in the vicinity of the box, to attract termites to said
box.
- 10 2. The system according to claim 1 wherein the reticulation system includes a drip
control means disposed in said first conduit in the box to facilitate adjustment of the flow
rate of liquid delivered to the ground in the vicinity of the box.
- 15 3. The system according to claim 1 or 2 further including one or more tubular
members, each being open at opposite ends, one end of each member connected to said
box and an opposite end of said tubular members spaced from said box, said tubular
members providing a passage for termites to enter said box.
- 20 Dated this 12th day of January 2001.

BIZ FRIDAY PTY LTD

By Its Patent Attorneys

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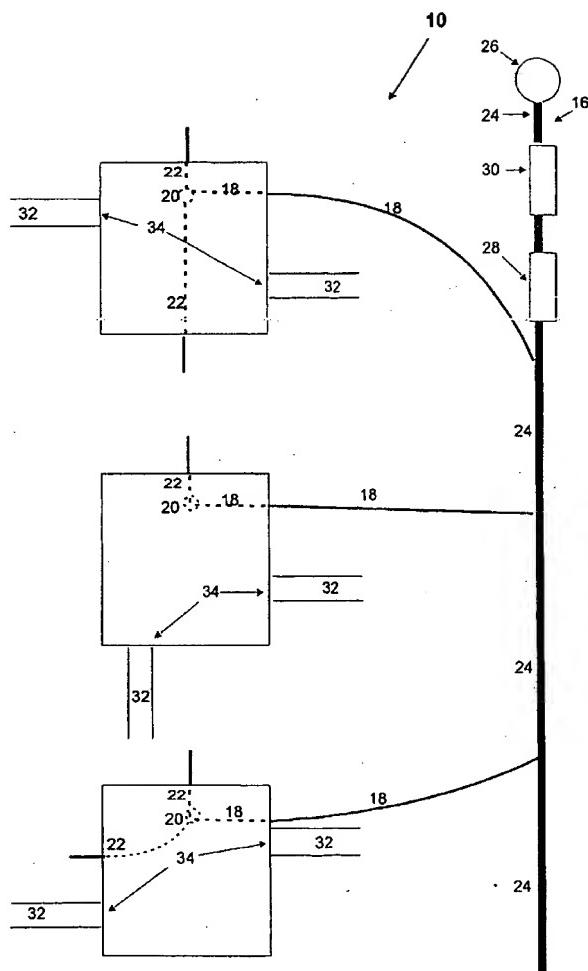


Fig 1

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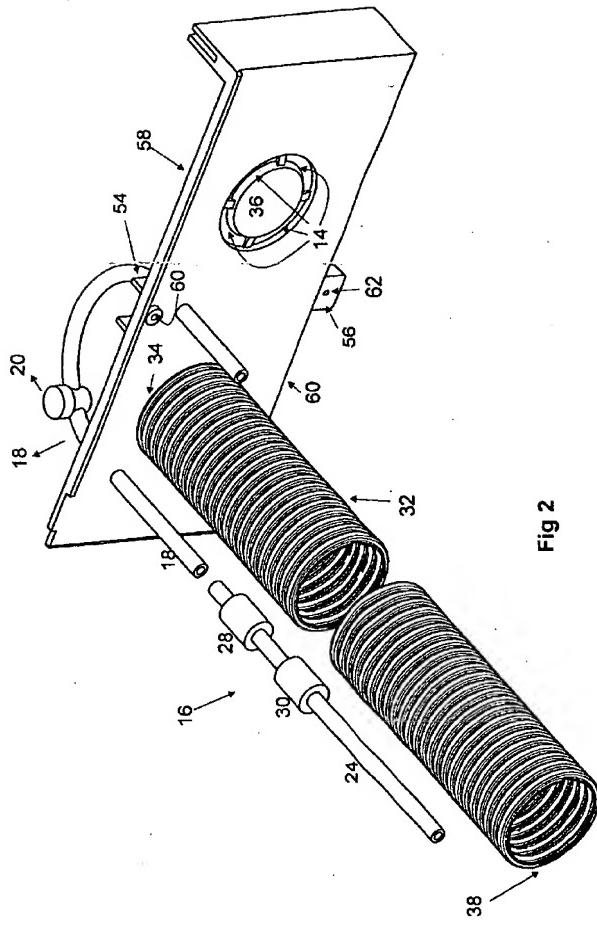


Fig 2

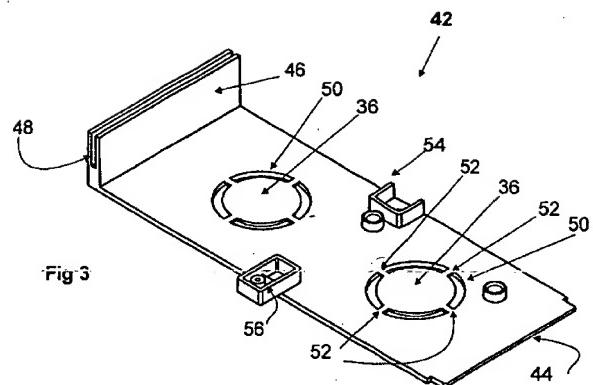


Fig 3

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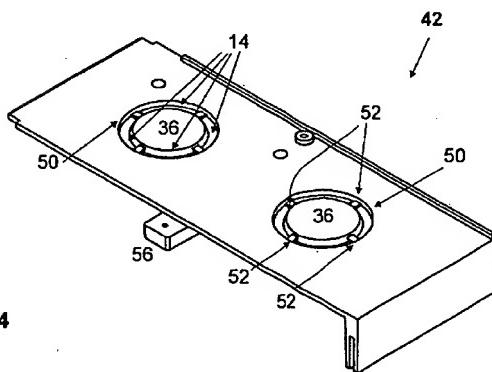


Fig 4

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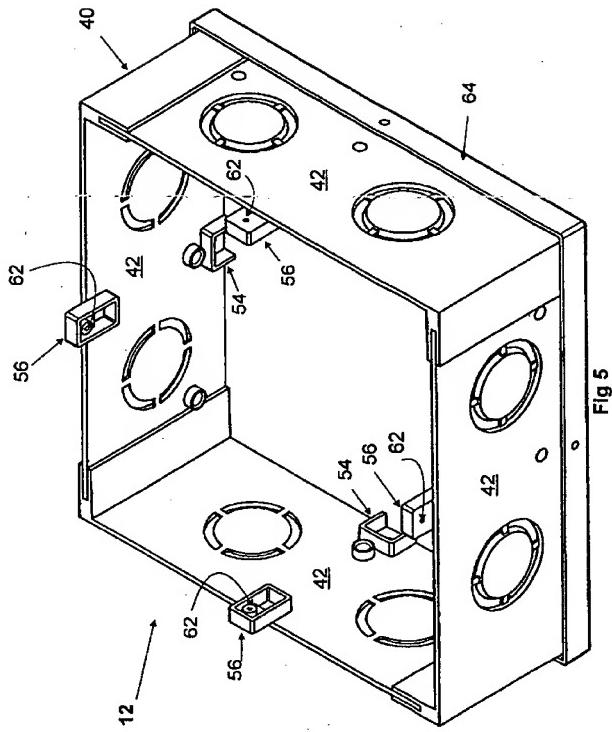


Fig 5